CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.
MONITORING AND REPORTING PROGRAM
BERRYESSA GARBAGE SERVICE, INC.
STEELE CANYON LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE
AND CORRECTIVE ACTION
NAPA COUNTY

This monitoring and reporting program (MRP) incorporates requirements for post-closure maintenance and corrective action monitoring of the landfill. This MRP is issued pursuant to Water Code Section 13267. Compliance with this MRP is ordered by Waste Discharge Requirements (WDRs) Order No. ___. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

Pursuant to Title 27, California Code of Regulations (27 CCR) Sections 20080(d)(1) and 20080(g), the Discharger shall maintain water quality monitoring systems for background and corrective action monitoring.

A. SUMMARY OF MONITORING & REPORTING FREQUENCIES

Table A

Section	*Reporting:*	*Frequency*
B.	Periodic Reports:	
	1. Semiannual Report	Semiannually
	2. Annual Monitoring Summary Report	Annually
	3. Constituents of Concern Report (Attachment D)	Every 5 years
C.	Water Quality Protection Standard Report	Update as necessary
	Monitoring:	
D.	Leachate Monitoring	
	1. Seeps	
	A. Wet Season	Monthly
	B. Dry Season	Quarterly
E.	Groundwater Monitoring:	
	1. Elevation	Quarterly
	2. Background & Corrective Action Monitoring	See Table E.3
	3. Constituents of Concern	Every 5 years
F.	Facility Monitoring:	
	1. Standard Observations	
	A. Wet Season (October 1 – April 30)	Monthly
	B. Dry Season (May 1 – September 30)	Quarterly
	2. Maintenance Inspections	Quarterly
	3. After Significant Storm Events	Within 7 Days After Event
	4. Site Winterization	Annually
G.	Surface Water Monitoring:	Semiannually

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required under Order No. ___ and the April 2000 Standard Provisions and Reporting Requirements (SPRR). Reports shall be submitted semiannually, annually and every five years, as outlined below**.**

1. Schedule

Monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

Table B

Report	End of Reporting Period	Date Report Due
First Semiannual	30 June	**31 July**
Second Semiannual	31 December	**31 January**
Annual Report	31 December	**31 January**
5-Year COC Report	31 December 2006 and every 5 years thereafter	**31 January 2007 and every 5 years thereafter**

2. Semiannual Reports

Each semiannual monitoring report shall include the following information:

A. A compliance evaluation summary for the monitoring period.
B. A tabular summary of well information from the installation logs, including well name, top-of-casing elevation, total depth, depths/elevations of screened interval, aquifer or zone (i.e., uppermost), and soil type(s) over the screened interval.
C. The results of groundwater elevation monitoring.
D. Tabular summaries of corrective action monitoring data for each unit showing sampling dates, well/monitoring point, constituents, concentrations, and concentration limits. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period (i.e., highlight exceedances).
E. Contaminant contour maps of representative corrective action monitoring data, showing the estimated extent of the contaminant plume.
F. Tables of historical monitoring data for each unit showing well/monitoring point, sampling dates, constituents, concentrations, and concentration limits. The data shall be presented so as to clearly show historical concentrations at each well.
G. Plots, graphical summaries and a narrative discussion of the results of correction action monitoring, as specified in Section E.3 herein.
H. Field and laboratory tests sheets.
I. An electronic copy of the data in a digital format acceptable to the Executive Officer.

3. Annual Monitoring Summary Report

An Annual Monitoring Summary Report (Annual Report) shall be prepared and submitted in accordance with this section of the MRP and Reporting Requirement H.4 herein. The report shall summarize monitoring results for the prior year and include a discussion of compliance with the WDRs and the Water Quality Protection Standard. The report shall contain both tabular and graphical summaries, including time series plots of

historical monitoring data (including the prior year's data) for each monitoring parameter/COC. For corrective action monitoring data, the report shall also include the following:

A. A summary of the results of trend analysis performed on each constituent of the release during the prior year
B. A summary of the results of water chemistry analysis of water quality data collected during the prior year.
C. Contaminant contour maps for representative constituents (e.g., TDS and chloride) constructed as part of semiannual reporting during the prior year and a discussion as to whether the size of the plume and concentrations within have increased, decreased, or remained the same since the previous monitoring year.

The Annual Report may be included in the Second Semiannual Report for each year. The 2006 Annual Report shall include a copy of the Sample Collection and Analysis Plan (sampling plan) referenced under WDR Monitoring Specification E.5.

4. Five-Year COC Reports
Same information as semiannual reports for all COCs listed in Attachment D.

Reports which do not comply with the above-required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs.

C. WATER QUALITY PROTECTION STANDARD (Section 20390)

The Water Quality Protection Standard (WQPS) shall consist of all Constituents of Concern, Concentration Limits for each constituent of concern, Monitoring Points, Point of Compliance, and the Compliance Period.

1. Constituents of Concern (Section 20395)
The constituents of concern (COCs) for the landfill shall be as follows:

Table C

Constituents of Concern	Units	Test Method
Field Parameters:	See Attachment D	
General Minerals:	See Attachment D	
Inorganics (dissolved)	µg/L	See Attachment D
Volatile Organic Compounds	µg/L	USEPA Method 8260B
Semi-Volatile Organic Compounds	µg/L	USEPA Method 8270
Organophosphorus Pesticides	µg/L	USEPA Method 8141A
Chlorinated Herbicides	µg/L	USEPA Method 8151
Organochlorine Pesticides	µg/L	USEPA Method 8081A
Polychlorinated Biphenols (PCBs)	µg/L	USEPA Method 8082

2. Concentration Limits (Section 20400)
Concentrations limits shall be developed/updated for groundwater and surface water monitoring parameters and COCs listed in the monitoring schedules herein, as follows:

a. For VOCs and other organic COCs the concentration limit shall be the MDL.
b. For inorganic monitoring parameters and COCs for which at least 10% of the data from background samples equal or exceed their respective MDL, the concentration limit shall be determined as follows:

i. Using the Tolerance Interval statistical procedure applied to historical background data, or

ii. Using an alternative statistical method approved by the Executive Officer per Monitoring Specification E.17 of the WDRs.

c. For inorganic monitoring parameters and COCs for which less than 10% of the data from background samples equal or exceed their respective MDL, the concentration limit shall be the PQL.

Prior to calculating/updating concentration limits, background data shall be screened for significant rising or falling trends. If a significant trend is identified that reflects changes in background conditions, the trend data shall be used to update concentration limits. Otherwise concentration limits shall be developed only from prior historical data. Tolerance limits shall take into account seasonality.

3. Monitoring Points (Section 20405)
The monitoring points for groundwater monitoring shall be as listed in Sections E.2 and E.3 of this MRP.

4. Point of Compliance (Section 20405)
The point of compliance (POC) for the water standard is a vertical surface located at the hydraulically down gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The POC wells for the unit shall be MWs-8 and 9.

5. Compliance Period (Section 20410)
The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger confirms a new release from the unit.

D. LEACHATE MONITORING

The Discharger shall monitor the landfill for leachate seeps **monthly** during the wet season and **quarterly** during the dry season as part of standard observations. Any leachate seeps observed during these inspections or at any other time shall be sampled and analyzed for the constituents of concern referenced in Table C herein. Reporting shall be conducted in accordance with Reporting Requirement H.5 of this MRP.

E. GROUNDWATER MONITORING

1. Groundwater Elevation Monitoring (Section 20415(e)(13))

The groundwater surface elevation (in feet and hundredths, MSL) in all wells and piezometers shall be measured on a **quarterly** basis. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters may be used to fulfill this requirement. Groundwater elevations for all upgradient and down gradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. The results of groundwater elevation monitoring shall be displayed on a water table contour map and/or groundwater flow net for the site and included in each monitoring report. The Discharger shall use the groundwater elevation monitoring data to determine the following:

A. The groundwater flow velocity
B. The gradient direction in the upper aquifer, and in any additional zone of saturation monitored pursuant to this MRP
C. Times of highest and lowest elevations of the water levels in the wells
D. Separation of groundwater from the lowest point of the unit

The results of these determinations shall be included in the semi-annual reports.

2. Background Monitoring (Section 20415(b)(1)(A))

The Discharger shall install and operate a sufficient number of Background Monitoring Points at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the units per Section 20415(b)(1)(A) of Title 27. Background monitoring data analysis shall include developing/updating concentration limits for statistical monitoring parameters and COCs, as necessary.

At this facility, background groundwater monitoring points shall consist of MW-6 (in the borrow area north of LF-1) and MW-7 (in the borrow area northeast of LF-2) and any future wells installed upgradient of either landfill for background monitoring. The monitoring schedule shall be as specified in Table E.3.

3. Corrective Action Monitoring (Sections 20425 and 20430)

The Discharger shall install and operate a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. A sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Collection and analysis of samples shall be in accordance with procedures set forth in the Sample Collection and Analysis Plan per Monitoring Specification E.5 of the WDRs.

The corrective action monitoring points at this facility shall include MWs-8 and 9, and any future wells installed along the point of compliance, down gradient, and/or side gradient of the unit to monitor the nature and extent of the release and/or progress of corrective action. Groundwater samples shall be collected and analyzed in accordance with the following schedule:

Table E.3
Corrective Action Monitoring Schedule

Parameter	Units	Frequency	Monitoring Approach	
Field Parameters			Nature/Extent	Trends
Elevation	Feet MSL	Quarterly	---	---
Specific Conductance	µMhos/cm	Semiannually	---	---
pH	pH units	Semiannually	---	---
Temperature	^{o}C	Semiannually	---	---
Turbidity	NTU	Semiannually	---	---
Monitoring Parameters (Attachment C)				
General Minerals:				
TDS	mg/L	Semiannually	Interwell	Intrawell
Chloride	mg/L	Semiannually	Interwell	Intrawell
Sulfate	mg/L	Semiannually	Interwell	Intrawell
Total Alkalinity	mg/L	Semiannually	Interwell	Intrawell
Total Hardness	mg/L	Semiannually	Interwell	Intrawell
Major Anions	mg/L	Annually	Interwell	Intrawell
Major Cations	mg/L	Annually	Interwell	Intrawell
Dissolved Inorganics	µg/L	Every 2½ years[1]	Interwell/Intrawell	Intrawell
VOCs	µg/L	Every 2½ years[1]	Intrawell	Intrawell
Constituents of Concern (Attachment D)		Every 5 years		

1. Monitoring frequency chosen such that every other sampling event coincides with 5-year COC event.

Five-year COC monitoring under this Order shall be conducted by 30 November 2006 and at least every five years thereafter (see Section B.4).

A. Monitoring Data Analysis

Monitoring data analysis shall be include the following:

a. Background Data
   - Updating concentration limits for statistical monitoring parameters and COCs, as necessary.

b. Nature and Extent of Release
   - Comparisons with concentration limit to identify any new or previously undetected constituents at a monitoring point
   - Water chemistry analysis by appropriate methods (i.e., ion balance, Piper diagram, Stiff diagram etc.) using major ion and cation data.
   - Preparation of contaminant contour maps for representative constituents of the release.

c. Effectiveness of Corrective Action
   - Preparation of time series plots for representative constituents
   - Trend analysis for each constituent using appropriate statistical and graphical methods (e.g., Mann-Kendall).
   - Comparison of contaminant contour maps for representative constituents of the release showing historical changes in plume size and concentrations.

The results of the above analysis, as applicable, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Report, as specified under Section B above. The semiannual monitoring report shall also include a discussion of the progress of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in 27 CCR Section 20430(h).

F. FACILITY MONITORING

1. Standard Observations

Standard Observations shall be performed **monthly** during the wet season (October 1 to April 30) and **quarterly** during the dry season (May 1 to September 30) and shall include those elements identified in Reporting Requirement H.3.f herein. Each monitoring report shall include a summary and certification of completion of all Standard Observations. Field logs of standard observations shall also be included in the report.

2. Regular Maintenance Inspections

Landfill facilities (e.g., monitoring wells) shall be inspected **quarterly** to identify the need for maintenance and repairs. Necessary repairs shall be completed within 30 days of each inspection. Field logs of these inspections and documentation of the repairs shall be included in each semiannual monitoring report.

3. After Storm Events

Within seven days following each significant storm event (i.e., one which produces 2.5 inches or more of precipitation within a 24-hour period, as measured at the Markely Cove Station), the Discharger shall inspect the landfill cover and precipitation and drainage facilities for damage. Areas of erosion or sedimentation observed during the inspection(s) shall be flagged and repaired within seven days of identification. If repairs cannot be completed within the seven-day time frame, the Discharger shall notify the Regional Board of such and provide a schedule for completing necessary repairs. Findings and repairs implemented as a result of these inspections shall be included in each semiannual

monitoring report. If no inspection was conducted because there was no significant storm event during the semiannual period, the report shall state such fact.

4. Site Winterization

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility for the purpose of winterizing the site. The inspection shall identify any damage to the landfill cover, grade, precipitation and drainage controls, access roads and other landfill facilities. Any necessary construction, maintenance, or repairs to these facilities shall be completed by **31 October**. The Discharger shall document the results of the winterization inspection and any repair measures implemented in the Annual Report due by **31 January** of each year.

Documentation of the results of the above inspections and any repairs implemented shall include field observations, the location of any damage observed (i.e., on a site map), photographs of the damage, and a description of any repairs implemented, including post-repair photographs.

G. SURFACE WATER MONITORING (Section 20415(c))

1. Corrective Action

The Discharger shall conduct surface water monitoring for the purpose of developing/updating concentration limits and monitoring potential impacts from leachate seeps and/or hydraulic communication with impacted groundwater. The surface water monitoring locations shall be as follows (see Attachment B):

Unit	Surface Water	Monitoring Point	
		Upstream	Downstream
LF-2	Storm water (former leachate collection) pond	---	SW-1
Site	SW ravine creek	SW-5	SW-3

Surface water monitoring shall be conducted for the field and monitoring parameters specified in Table E.3, except for elevation, dissolved inorganic constituents and VOCs. Monitoring frequencies shall also be as listed in Table E.3. COC monitoring shall be required for surface water only if monitoring data analysis (see Monitoring Specifications E.18 through E.20) and/or field observations indicates that a release has occurred (see Section XI.3, RESPONSE TO RELEASE, SPRR; Reporting Requirement F.10 herein). Monitoring data analysis and reporting shall be as specified in Sections B and E.3.A, as applicable to surface water.

2. Storm Water

The discharger shall monitor storm water runoff from the site under the State Water Resources Control Board General Industrial Storm Water Permit, Water Quality Order No. 97-03-DWQ (General Permit). The storm water monitoring locations shall, at a

minimum, include the following (see Attachment B: Site Map):

Unit	Surface Water	Monitoring Point	
		Upstream	Downstream
LF-1	Perimeter drain	SW-6	SW-2
LF-2	Storm water pond	---	SW-4

The results of storm water monitoring for a given monitoring period shall be reported pursuant to the General Permit and summarized in the monitoring reports submitted under this Order. If there is no discharge from the site during the monitoring period, or the Discharger did not obtain samples of the discharge, the Discharger shall state such facts and circumstances in the monitoring report.

H. REPORTING REQUIREMENTS

1. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period.

   Such legible records shall show the following for each sample:

   a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

   b. Date, time, and manner of sampling;

   c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

   d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;

   e. Calculation of results; and

   f. Results of analyses, and the MDL and PQL for each analysis.

2. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. See also WDR Reporting Requirement F.3.

3. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:

a. For each monitoring point and background monitoring point addressed by the report, a description of:

   i. The time of water level measurement;

   ii. The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

   iii. The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;

   iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and

   v. A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.

b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.

d. Laboratory statements of results of all analyses evaluating compliance with requirements.

e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.

f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall include:

   i. For the Unit:

      1) Evidence of ponded water at any point on the facility (show affected area on map);

      2) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

      3) Evidence of erosion and/or of day-lighted refuse.

   ii. Along the perimeter of the Unit:

      1) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);

2) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

3) Evidence of erosion and/or of day-lighted refuse.

iii. For receiving waters:

1) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;

2) Discoloration and turbidity - description of color, source, and size of affected area;

3) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;

4) Evidence of water uses - presence of water-associated wildlife;

5) Flow rate; and

6) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.

4. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Board covering the reporting period of the previous monitoring year. This report shall contain:

a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

b. All historical monitoring data, including data for the previous year, shall be submitted in tabular form as well as in a digital file format. The Regional Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], in that this facilitates periodic review by the Regional Board.

c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the WDRs.

d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.

e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.

f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

5. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Board **within seven days**, containing at least the following information:

   a. A map showing the location(s) of seepage;

   b. An estimate of the flow rate;

   c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);

   d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and

   e. Corrective measures underway or proposed, and corresponding time schedule.

   See Section XI. RESPONSE TO RELEASE, SPRR.

6. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with Monitoring and Reporting Program No. ____ required by Section 13750 through 13755 of the California Water Code.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

Attachments
JDM: 4/2/06